

## CLAIMS

1           1. Method for analyzing a patient tissue sample, whose genomic and/or  
2   proteomic and/or epigenomic and/or biophysical properties are essentially preserved, to  
3   determine its diseased tissue fractions, in which

4               (a) sections are prepared from the tissue sample,  
5               (b) at least one of these sections is subjected to a histological/cytological  
6   examination, while at least one other section is subjected to nonmorphological analytical  
7   testing,

8   characterized by the fact that  
9               (c) in the histological/cytological examination, at least the quantitative fraction

10   of the diseased tissue or diseased cells and/or some other morphological aspect is determined in  
11   the tissue sample by means of an image processing system, and

12               (d) at least the determined quantitative fraction and/or other morphological  
13   aspect is used as a reference quantity on which the evaluation of the results of the  
14   nonmorphological analytical testing is based.

1           2. Method for analyzing a patient tissue sample, whose genomic and/or  
2   proteomic and/or epigenomic and/or biophysical properties are essentially preserved, to  
3   determine its diseased tissue fractions, in which

4               (a) one or more samples are taken from the tissue sample,  
5               (b) and at least one portion (divided sample) of the sample is subjected to a  
6   histological/cytological examination, and at least one other portion (divided sample) of the  
7   sample is subjected to nonmorphological analytical testing,

8 characterized by the fact that

9 (c) in the histological/cytological examination, at least the quantitative fraction  
10 of the diseased tissue or diseased cells and/or some other morphological aspect is determined in  
11 the tissue sample or sample by means of an image processing system, and

12 (d) at least the determined quantitative fraction and/or other morphological  
13 aspect is used as a reference quantity on which the evaluation of the results of the  
14 nonmorphological analytical testing is based.

1 3. Method in accordance with Claim 2, characterized by the fact that the  
2 sample of the tissue sample is taken by a core sampler, by aspiration, or by scrape preparation.

1 4. Method in accordance with any of the preceding claims, characterized by the  
2 fact that in the histological/cytological examination, the appearance and/or the distribution  
3 pattern of the diseased tissue and/or diseased cells in the tissue sample is additionally  
4 determined and is used as the basis for evaluating the results of the nonmorphological  
5 analytical testing.

1 5. Method in accordance with any of the preceding claims, characterized by the  
2 fact that the sections or the samples are prepared or taken directly from the fresh tissue sample.

1 6. Method in accordance with any of the preceding claims, characterized by the  
2 fact that the tissue sample is frozen before the sections are prepared or before the samples are  
3 taken.

1 7. Method in accordance with any of Claims 1 to 6, characterized by the fact

2 that the tissue sample is mounted on a slide and frozen immediately after it has been removed  
3 from a patient, that sections of the frozen tissue sample are then prepared with a microtome,  
4 and that the sections are then sent for histological/cytological examination or for  
5 nonmorphological analytical testing.

1                   8. Method in accordance with Claim 7, characterized by the fact that after the  
2 sections have been prepared, the tissue sample is left on the slide, so that it is available for the  
3 preparation of new sections.

1                   9. Method in accordance with any of Claims 1 to 8, characterized by the fact  
2 that the slide on which the tissue sample is mounted is designed in such a way that it can be  
3 reproducibly placed in the microtome, so that the tissue sample has the same relative  
4 orientation to the microtome in each preparation of sections.

1                   10. Method in accordance with any of Claims 1 to 9, characterized by the fact  
2 that at least two sections are used for histological/cytological examination, and that these  
3 sections are selected in a way that ensures that the section or sections sent for  
4 nonmorphological analytical testing were located between these sections in situ.

1                   11. Method in accordance with any of Claims 2 to 9, characterized by the fact  
2 that the divided samples that are sent for histological/cytological examination are selected to  
3 ensure that the one or more divided samples sent for nonmorphological analytical testing were  
4 located between these divided samples in situ.

1                   12. Method in accordance with any of the preceding claims, characterized by

2 the fact that the method is used for intraoperative or perioperative clinical diagnosis or  
3 experimental pathological analysis.

1                   13. Method in accordance with any of the preceding claims, characterized by  
2 the fact that the method used in nonmorphological analytical testing is a method for detecting  
3 genomic DNA, cDNA, mRNA, the epigenomic methylation pattern, proteins, viral or bacterial  
4 nucleic acids, or other biomolecules, or a method for determining the biophysical  
5 characteristics of a sample.

1                   14. Method in accordance with any of the preceding claims, characterized by  
2 the fact that the nonmorphological analytical testing includes the determination of a quantity  
3 that makes it possible to determine the fraction of diseased tissue and/or other tissue  
4 components in the tissue sample, and that the fraction thus determined is additionally used  
5 quantitatively as the basis of the evaluation of the results of the nonmorphological analysis.

1                   15. Method in accordance with any of the preceding claims, characterized by  
2 the fact that a microarray or a suspension array is used as part of the nonmorphological  
3 analytical testing.

1                   16. Method in accordance with any of the preceding claims, characterized by  
2 the fact that the biomolecules to be detected as part of the nonmorphological analytical testing  
3 are subjected to a labeling step.

1                   17. Method in accordance with any of the preceding claims, characterized by  
2 the fact that the nucleic acids to be detected as part of the nonmorphological analytical testing

3 are subjected to an amplification step.

1                   18. Method in accordance with any of the preceding claims, characterized by  
2                   the fact that the histological/cytological examination includes at least one staining step.

1                   19. Method in accordance with any of the preceding claims, characterized by  
2                   the fact that the histological/cytological examination includes at least one immunohistochemical  
3                   step and/or in situ hybridization step.

1                   20. Method in accordance with any of the preceding claims, characterized by  
2                   the fact that several sections are each subjected to different histological/cytological tests.

1                   21. Use of a method in accordance with any of the preceding claims to develop  
2                   a tumor data bank.

1                   22. Use of a method in accordance with any of the preceding claims to develop  
2                   individualized cancer therapies.

1                   23. Use of a method in accordance with any of the preceding claims to adjust a  
2                   patient to an individualized cancer therapy.